

Literature Review Commissioned by the Global Environmental Outreach Centre (GEOC)

Fiscal Year 2014

REVIEW OF SOCIAL LEARNING THEORY

And its application in collaborative governance processes for environmental management and sustainable development

January 2015

Institute for Global Environmental Strategies (IGES)

Literature Review Commissioned by the Global Environmental Outreach Centre (GEOC)

Fiscal Year 2014

REVIEW OF SOCIAL LEARNING THEORY

And its application in collaborative governance processes for environmental management and sustainable development

January 2015

Prepared by: Dr. Robert J. Didham

Affiliation: Senior Coordinator for Capacity Development and Knowledge Management

Institute for Global Environmental Strategies (IGES)
2108-11 Kamiyamaguchi, Hayama, Kanagawa 240-0115

Although every effort is made to ensure objectivity and balance, the publication of research results or translation does not imply IGES endorsement or acquiescence with its conclusions or the endorsement of IGES financers.

IGES maintains a position of neutrality at all times on issues concerning public policy. Hence conclusions that are reached in IGES publications should be understood to be those of the authors and not attributed to staff-members, officers, directors, trustees, funders, or to IGES itself.

EXECUTIVE SUMMARY

The importance of collaborative governance and participatory decision making for sound environmental management and sustainable development has been documented and promoted in numerous studies. This form of social cooperation is seen as central in mobilising the necessary human capital and ingenuity that is needed to dramatically modify current social trajectories and lead towards transformative change. Although the proponents of collaborative governance present substantial evidence to support the effectiveness of these processes in stimulating change, wider attempts to model and replicate the facilitation of such collaborative governance approaches often fail to achieve the same level of efficacy and impact highlighted in the best practice cases.

This paper reviews the literature on social learning theory and considers its application in processes of collaborative governance. Social learning is both the individual and collective learning that occurs in groups when they come together to deliberate on, envision and enact some type of collective change/improvement. This form of learning is driven by discourse among group members and is enhanced through action-reflection cycling, furthermore pragmatic and consensus validation serve as the main means for validating new knowledge generation. In social learning processes, individuals do not just gain “existing” knowledge, but groups collectively codify and elaborate new understandings and worldviews.

A procedural analysis of social learning elucidates the means for facilitating social learning within collaborative governance processes in order to achieve the desirable efficacy of such processes. As social learning is not about the formulaic transfer of knowledge or skill sets, but rather the collective investigation and generation of new meaning and knowledge, the learning approach facilitated in this process must move beyond the rational education models reflected in traditional community awareness raising approaches. Instead, social learning may be best facilitated through an effort to create the *place / group setting* and *collaborative process* that engenders individuals’ autonomous participation in such collective inquiry. For future research on social learning in collaborative governance, evaluation will need to consider three distinct factors – process, learning achievements, and social learning outcomes – to provide a holistic framework for evaluating the overall effectiveness of social learning.

TABLE OF CONTENTS

<i>Executive Summary</i>	i
<i>Figures, Tables and Boxes</i>	iv
1. Social Learning for Sustainability – A critical perspective	1
2. Analytical Framework: a procedural approach to social learning	6
<i>2.1 Community of Practice</i>	6
<i>2.2 Experiential Learning</i>	8
<i>2.3 Cooperative Inquiry and Communicative Action</i>	9
<i>2.4 Application of Analysis</i>	11
3. Evaluating Social Learning in Collaborative Governance Processes	12
4. Findings for engaging Social Learning in Collaborative Governance	14
<i>References</i>	17

FIGURES

Figure 1: Five Conditions for an Effective Learning Community	7
Figure 2: The Learning Cycle of Experiential Learning Theory	8
Figure 3: Five Braided Strand of Social Learning	13

TABLES

Table 1: Three Schools of Thought on Social Learning Theory	2
Table 2: Glasser's Three Categories of active Social Learning	3
Table 3: Proposed Steps for Securing a Community of Practice for Sustainability Learning	15

BOXES

Box 1: Definitions of Social Learning (in Sustainability and Environmental Management Perspectives)	5
------------------------------------------------------------------------------------------------------------	----------

1. Social Learning for Sustainability – A critical perspective

The current political discourse on sustainable development is not easily related to the daily lives of ordinary people even though it is well understood that achieving sustainability transformations will require dramatic changes in the way individuals live their lives and form their societies. In response to this challenge, the concept of “sustainable lifestyles” is viewed to be complimentary to that of sustainable development with the first bringing relevance to sustainability at the micro level and the latter at the macro level. “Creating sustainable lifestyles means rethinking our ways of living, how we buy and what we consume but, it is not only that. It also means rethinking how we organize our daily life, altering the way we socialize, exchange, share, educate and build identities. It is about transforming our societies towards more equity and living in balance with our natural environment” (UNEP 2011). The application of a social learning approach can improve the transformative nature of these processes by increasing opportunities for active engagement in critical examination of current consumption patterns and lifestyle practices; reimagining the individual and collective response to environmental management and identifying solutions towards more sustainable patterns; planning and implementing programmes for mainstreaming these solutions; and monitoring and evaluation of implementation activities and outcomes.

Collaborative governance provides a means to bring individuals and stakeholders together in dialogue to renegotiate the way we organize our daily lives and to redefine what it means to achieve sound environmental management and sustainable development. However, to develop these new understandings, worldviews and patterns of living around what it means to live in a sustainable manner (that is context and culturally relevant), stakeholders must go through a process of both individual and collective learning and knowledge production. Social learning theory provides a model for both analysing and facilitating the transformative learning processes that allow processes like collaborative governance to work for effective social change towards sustainability.

The effective application of a social learning approach in environmental management necessitates first a critical review of social learning theory and its historical development through three distinct phases (or schools of thought). The first development of social learning theory was by Bandura in the early 1960s and is contextualized within the fields of social cognitive theory and cognitive psychology. Bandura’s research on social learning theory challenged the earlier behaviourism traditions in psychology that had held that behavioural learning occurred through conditioning and direct reinforcement. Bandura demonstrated that individual behavioural learning could also occur through observation, and he argued that learning is a cognitive process that occurs in social context and is influenced by social norms (Bandura, 1977). The cognitive psychology school of thought on social learning theory thus provides an explanation of *how individuals learn from society*.

The second school of thought on social learning theory developed in the field of organisational learning and organisational management. The concept was first raised in this setting in Argyris and Schon’s (1978) work on double-loop learning and in Revans’ (1982) work on action learning processes. However, it was not until the early 1990s that this second school of thought on social learning really began to flourish (Wang & Ahmed, 2002). This approach to social learning theory is less focused on individual learning and more on how group learning occurs and how it can be dynamically structured and facilitated. Furthermore, it considers how an organisation learns and adapts based on the sum of experiences from its individual members. Some academics such as Senge (1990) used this approach to

make specific recommendations for structuring and developing companies into learning organisations (Flood, 1999). This second school of thought on social learning theory moves us towards an understanding of *how collective/group learning takes place*, and how it is influenced through the real world experiences of group members.

The third school of thought on social learning emerged around a decade ago with a noted application of this theory towards ecological issues, natural resource management and sustainable development. This new approach grew out of earlier work on community participation in natural resource management, participatory rapid appraisal, and group problem solving approaches. It has also drawn on specific educational pedagogies such as community of practice, experiential learning, and problem-based learning to strengthen the overall efficacy of this approach. This third school of thought considers *how people collectively reflect, deliberate on and envision new sustainable pathways of living* – pathways of living that may deviate from previous traditions and conventions. Under this school of thought, social learning is defined as, “learning taking place in groups, communities, networks and social systems that operate in new, unexpected, uncertain and unpredictable circumstances; it is directed at the solution of unexpected context problems and it is characterised by an optimal use of the problem solving capacity which is available within this group or community” (Wildemeersch 1995 in Wildemeersch 2009: 100).

Table 1: Three Schools of Thought on Social Learning Theory

Phase	School of Thought	Perspective
1	Cognitive Psychology	<i>Individual Learning from Society</i>
2	Organisational Learning	<i>Collective Learning of/about Society</i>
3	Ecology and Education	<i>Sustainability Learning as Society and for social transformation</i>

It is thus this third school of thought on social learning that proves most useful in addressing the question how can society collectively move forward towards sound environmental management and sustainable development in a manner that allows us to overcome and imagine beyond the problems and challenges faced by humanity today. It is in this looking forward that we must also look beyond current conventions and limits of thinking to consider wider approaches and perspectives on how as a society we not only learn new behaviours and practices, but also how we transform dominant world views through the incorporation of a strong sustainability perspective. Glasser argues for positioning social learning, “as the foundation and conduit for harnessing the human propensity to contemplate our fate and futures” and in so doing supplanting “economic growth as the metanarrative and vehicle for bringing about a more sustainable and desirable world for all” (2009: 38).

The third school of thought on social learning and its application in natural resource management embeds the process of social learning with the context of governance structures and the natural environment. Natural resources management faces complex problems, high uncertainty and limited predictability, thus the human dimension plays a key role in securing appropriate and effective resource management. Governance processes that engage a diversity of stakeholders in the collective decision making on these problems and issues are thus key to harnessing the human potential for problem solving and adaptive management. “This implies that management is not a search for the optimal solution to one problem but an ongoing learning and negotiation process where a high

priority is given to questions of communication, perspective sharing and development of adaptive group strategies for problem solving” (Pahl-Wostl and Hare 2004: 193-4).

Social learning in the third school of thought captures notable collective learning perspectives and extends beyond concepts of individual learning, furthermore these are seen as processes that go beyond the acquisition of mere factual knowledge. Social learning can be defined in this manner as, “Deliberative approaches that enhance collective learning processes among a diverse group of social actors, with different types of knowledge and perspectives, are thus central in the creation of new responses to threats for socio-ecological systems” (Garmendia and Stagl 2010: 1712). One of the challenges faced in achieving social learning that realises the creation of new responses and new social understandings is that the type of social interaction that takes place in various social learning situations, such as in collaborative governance and participatory decision making processes, is inherently influenced by social contexts and established norms and values. In this way, it is important that the roles of power and scale in influencing learning outcomes is both appreciated and addressed. In establishing a perspective social learning group, this can be partially addressed by ensuring that the collective groups members represent a wide range of differing world views, epistemological beliefs and knowledge systems, and in this way a “tension” it created from the outset that the group must initially work to overcome through a process of deliberation and negotiation (Reed et al., 2010).

Overcoming this tension does not mean that the group adopts one common world view, but rather they identify a common goal for their collective action that will allow each group member to support the process through their own expertise. Pahl-Wostl et al. explain, “During the initial stages of dealing with a problem, the framing and reframing of the problem domain determine the direction of the overall process... Differences in how an issue is framed are among the key reasons for problems in communication and entrenched conflicts among actors” (Pahl-Wostl et al. 2007: 11). The concepts, norms and world views that frame such problem definition may be derived from the actors’ diversity of knowledge and experience, especially in regards to their epistemological beliefs and how they make sense of their physical and social environments. The process of social learning will not specifically achieve consensus among group members nor is this a specific goal, but ideally it creates a common purpose and ability to deal constructively and openly with peoples’ differences (Pahl-Wostl et al., 2007). In addressing the power dynamics inherent in social learning processes, Glasser (2009) defines three categories of active social learning as hierarchical, non-hierarchical, and co-learning.

Table 2: Glasser’s Three Categories of active Social Learning

Hierarchical	Based on predetermined, inflexible relationships between established teachers and learners
Non-hierarchical	Based on two-way learning, where each participant, as an ‘expert’ in their own right, shares their knowledge and experience
Co-learning	Based on non-hierarchical relationships, collaboration, trust, full participation, and shared exploration

(Glasser 2009: 51)

Following a review of social learning in adaptive water management cases, Pahl-Wostl et al. argue that social learning can occur across two different levels and respective time scales. First, over short to medium time scales, social learning occurs between the engaged actors within and through the processes they are engaged in. Second, over medium to long time scale, structural and contextual shifts to the wider governing structure occur as part of the collective learning process (Pahl-Wostl et al. 2007: 10). Elaborating on how to achieve this second scale of learning and truly upscaling it to a social

level, many authors have tried to identify the key components that enable the occurrence of social learning. Tilbury proposes five key components of learning based change for sustainability: 1) systemic thinking, 2) envisioning, 3) critical thinking and reflection, 4) partnerships for change, and 5) participation (Tilbury, 2009). Keen et al. conclude that there are five key strands of activity that are integral to the ecological approach to social learning which closely parallel the previous five components proposed by Tilbury. The five key activity strands are: 1) reflection and reflexivity, 2) systems orientation and systems thinking, 3) integration and synthesis, 4) negotiation and collaboration, and 5) participation and engagement (Keen, Brown, & Dyball, 2005).

Rodela et al. (2012) conducted a review of 54 peer-reviewed papers that address the third-school of thought on social learning and its relationship to natural resource management. This study however concludes that in the majority of these papers there is a mismatch between the topic (i.e. social learning) and the contents of analysis. There are very few studies that have attempted to provide data/evidence on the actual effectiveness of social learning (Rodela, Cundill, & Wals, 2012). Reed et al. (2006) raise a similar point that in the literature, the concept and analysis of social learning is often methodologically confused and entangled with an investigation of the conditions necessary for social learning, for example levels of participation are often analysed to infer occurrence of social learning. However, just because participation has occurred this does not imply that social learning takes place, and vis versa the occurrence of social learning can occur even in the absence of a planned process for participation. The authors further argue that there is frequently also confusion between social learning itself and the potential outcomes of social learning (i.e. improved environmental management, enhanced trust, behaviour change, stakeholder empowerment, etc.) and also a lack of distinction between what should be classified as “individual learning” and what is wider “social learning” (Reed et al., 2010). “[G]reater conceptual clarity of social learning is essential to help understand the mechanisms through which it occurs, to develop more effective interventions to promote wider learning, if this is desired, and to design appropriate evaluations to determine if the goals of learning interventions have been met” (Reed et al., 2010: 3).

Facilitating social learning in collaborative governance and participatory in decision making is further recognised as a difficult procedure because the nature of social learning is a loose learning process that requires individuals’ autonomous engagement. Holden et. al. explain in detail:

“[A] great deal of social learning is and will remain unfacilitated. If we begin with this basic realization, then in order to maximize the public and explicit quotient of social learning, we will place less emphasis on formal rational learning mechanism such as checklists and advisory bodies and more emphasis within the planning process on creating space for unfacilitated deliberation by what Dryzek and Niemeyer (2010) call ‘mini-publics’ – small groups that mix positionality, identity and standing in relation to the plan or development at hand. Through this bringing to democratic light of emergent learning processes, we may be able to improve the quality and diversity of views and knowledge brought to bear in this learning; paraphrasing Bos, Brown, and Farrelly (2013: 410), to design the formal such that the informal may come alive” (Holden, Esfahani, & Scerri, 2014: 14).

This statement from Holden et. al. is not a statement that attempting to facilitate social learning is futile, but rather it highlights the importance of facilitating the *place (i.e. group setting)* and the *process (i.e. through dialogue and critical action – reflection)* as the key to promoting social learning rather than a more prescriptive focus on the contents of what is to be learned. Social learning, in this light, is not a path of learning a pre-determined knowledge set; instead it is a collaborative pursuit of investigation, discourse, practice and reflection to generate new knowledge that is pragmatically tested and collectively decided.

Box 1: Definitions of Social Learning (in Sustainability and Environmental Management Perspectives)

“The term social learning conceals great diversity. That many researchers describe the phenomena they are examining as ‘social learning’ does not necessarily indicate a common theoretical perspective, disciplinary heritage, or even language. Rather, the contributions employ the language, concepts, and research methods of a half-dozen major disciplines: they focus on individuals, groups, formal organizations, professional communities, or entire societies; they use different definitions of learning, of what it means for learning to be ‘social,’ and of theory. The deepest difference is that for some, social learning, means learning by individuals that takes place in social settings and/or is socially conditioned; for others it means learning by social aggregates” (Parson and Clark, 1995: 429 cited in Wals & van der Leij, 2009: 18).

“Although the idea of social learning is a bit messy in and by itself, in this book it tends to refer to learning that takes place when divergent interests, norms, values and constructions of reality meet in an environment that is conducive to learning. This learning can take place at multiple levels i.e. at the level of the individual, at the level of a group or organisation or at the level of networks of actors and stakeholders. ... From a social learning perspective, the emergence of sustainability in the context of education can be viewed both as an evolving product and as an engaging process. Hence, sustainability as a social learning *process* is more interesting than sustainability as an expert pre-determined transferable *product* (i.e. as set by a policy, code of behaviour, charter or standard)...” (Wals & van der Leij, 2009: 18).

“Social learning is the collective action and reflection that occurs among different individuals and groups as they work to improve the management of human and environmental interrelations. Social learning for improved human interrelations with the environment must ultimately include us all, because we are all part of the same system and each of us will inevitably experience the consequences of these change processes” (Keen et al., 2005: 4).

“As a specific, collective form of learning, social learning has special significance in planning and policy fields. Individuals and communities have diverse, partial, and sometimes irreconcilable perspectives on public problems and solutions. Learning together where these partial views intersect, diverge, and may reach compromise may be the only democratically legitimate means of devising socially reliable solutions to many contemporary planning and policy problems” (Holden, 2008: 3).

“Social learning could therefore be defined as a learning process that happens among different elements and at different levels; it is going beyond the acquisition of new factual knowledge by individuals and includes changes in the frames of reference—assumptions and values—while creating capacity for dealing with conflict ridden issues and for finding ways for joint action. It also implies gaining capacity for systems thinking, notably about complexities and uncertainties, and perceiving oneself as part of a whole, notably recognizing future generations and non-human species. This requires deliberation among relevant social actors. Opportunities for social learning make the appraisal process more interesting and worthwhile for actors to participate and social learning happening is an important outcome of participatory processes” (Garmendia & Stagl, 2010: 1716).

“A central hypothesis of the concept of social learning is that social involvement and the management of content are strongly interdependent and cannot be separated. The overall process aims to improve both technical qualities, such as the improvement of the state of the environment, and relational qualities, such as an increase in the capacity of a stakeholder group to manage a problem and/or institutional change. This leads as well to a different interpretation of the role of information and of information and communication tools and the ability of an actor network to use new information in social learning processes and to determine collective action. Knowledge relevant for decision making cannot be reduced to objective facts devoid of context and subjective interpretation. The development of joint interpretations and the implementation of collective action need to integrate tacit knowledge, which is not externalized and codified and can thus only be shared through joint activities that require physical proximity (Nonaka 1991). Participatory methods such as group model building and role-playing games are based on relational practices and can thus support social learning in actor groups (Pahl-Wostl and Hare 2004, Maurel et al. 2007). Such learning environments are perceived to be crucial for the adaptive governance of social-ecological systems (Folke et al. 2005, Pahl-Wostl 2005). Hence, an entirely new element of monitoring refers to the quality of the communication process in actor networks and the appropriateness of the chosen institutional setting” (Pahl-Wostl et al., 2007: 12).

2. Analytical Framework: a procedural approach to social learning

One of the challenges identified in previous studies of ecological/sustainability social learning is the ability or difficulty to separate the facilitative conditions (or prerequisites) for social learning from the factors of effective social learning in the research-analysis process. Linked to this first challenge is a more straightforward but also seemingly more difficult challenge of evaluating the effectiveness of the social learning that has actually occurred in a given case, i.e. measuring social learning outcomes. In order to elucidate a learning-oriented analysis on social learning for sustainability, this section investigates educational/learning approaches which may allow for more detailed investigation of the main elements of social learning that extend beyond a consideration of the facilitative conditions that are necessary for creating an environment where social learning may occur and begin to also consider the procedural approaches that support social learning. Exploring how social learning takes place with an aim towards identifying the key factors of an effective social learning process, the development of an analytical framework will be based on a review of four theoretical perspectives related to education, learning and social practice. The four perspectives that will be considered are: community of practice, experiential learning, cooperative inquiry and communicative action.

2.1 Community of Practice

Community of Practice (CoP) is a theory of social learning developed by Lave and Wenger in 1991 and elaborated by Wegner in 1998. CoP provides a valuable concept for understanding the important learning opportunities that exist in group settings and at a community-level. CoP is postulated on three common aspects: *mutual engagement*, *joint enterprise*, and *shared repertoire*. The concept starts with the idea that people group together to complete activities, and in doing so they must negotiate the meanings of the actions they engage in with one another. "Membership in a community of practice is therefore a matter of mutual engagement. That is what defines the community" (Wegner 1998: 73). The second aspect, joint enterprise, accounts for the fact that this type of mutual engagement must be a negotiated experience in which both purpose and relationships of accountability are developed. This leads to the community establishing its own unique form of practice. The mutual engagement and joint enterprise of a community of practice leads to the development of the third aspect – a shared repertoire. Through a history of negotiation and practice, a common set of language and resources are established that allow the members of the group to interact without having to constantly re-examine shared understandings. "The importance of our various communities of practice can thus be manifested in two ways: their ability to give rise to an experience of meaningfulness; and, conversely, to hold us hostages to the experience" (Wegner 1998: 85).

CoP has gained popular support in social, educational and management sciences as a valid approach to *situated learning*. "The overall apparatus of situated learning is a significant rethink of learning theory of value to anyone wanting to take learning beyond the individual... Part of its appeal is that a seemingly natural formation which enhances learning can be consciously developed, which is important for those implementing change" (Barton and Tusting 2005: 3). The learning process in CoP is very dynamic in that renegotiation and change are a continuous part of such practice. *Reification* and *participation* are key aspects to this learning process as the two main ways in which participants can influence the process of practice. In the process of community practice, *reification* is the act of

bringing concrete meaning to abstract concepts through their regular application and codification. *Participation*, on the other hand, is the process through which diverse ideas and concepts can be deliberated over to reach common understanding on which to structure practice (Wegner 1998: 88-93).

The purpose of presenting the CoP concept is to introduce this as a valuable conceptual framework for understanding social learning theory. The key point of CoP that will be further explored here is the basic architecture of how the concept is functionalised. Communities of practice are especially valuable because they allow for both the acquisition of existing knowledge and the creation of new knowledge through the dynamic process of mutual engagement in a shared practice. In designing a learning architecture for communities of practice, Wegner introduces three modes of belonging as central pillars of this design: *engagement*, *imagination*, and *alignment*. Each pillar consists of a further three identified facilities:

Engagement

- Mutuality;
- Competence;
- Continuity.

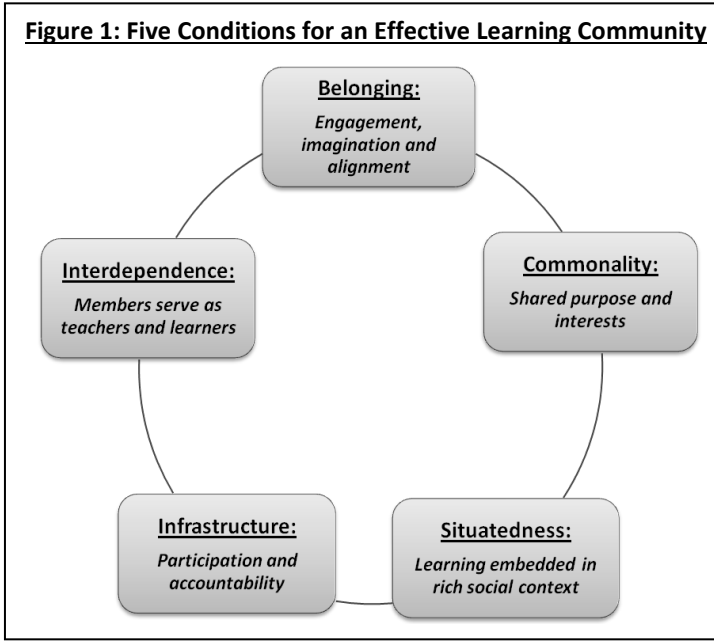
Imagination

- Orientation;
- Reflection;
- Exploration.

Alignment

- Convergence;
 - Coordination;
 - Jurisdiction
- (Wegner 1998: 237-9).

Hung and Chen (2001) also identify four dimensions of an effective learning community (though their research is on web-based communities, the four dimensions have wider applicability). First, *situatedness* – from the concept of situated cognition – puts forth that learners obtain both implicit and explicit knowledge when learning is embedded in rich social contexts. Second, *commonality* expresses the importance of a shared sense of purpose and common interests among a group of participants to engage in reflective practice. Third, *interdependency* is established when the various members of a group of learners bring to the group both unique skills and expertise and differing demands on the group. In contrast, a group with both homogenous expertise and demands for learning has little potential to become a dynamic community of learners. Fourth, an *infrastructure* that promotes and facilitates participation and ensures accountability is important for the long-term continuation of communities of practice (Hung and Chen 2001: 7). By adding *belonging*, as elaborated by Wegner and explained above, as a fifth dimension of an effective learning community we further strengthen the understanding of its basic architecture (see Figure 1).



The other aspect of CoP that must be considered is the individuals that make up the learning group. Handley et al. explain that identity-construction and the formation of self is a critical process for the individual members of a community of practice (Handley, Sturdy, Fincham, & Clark, 2006). In order for

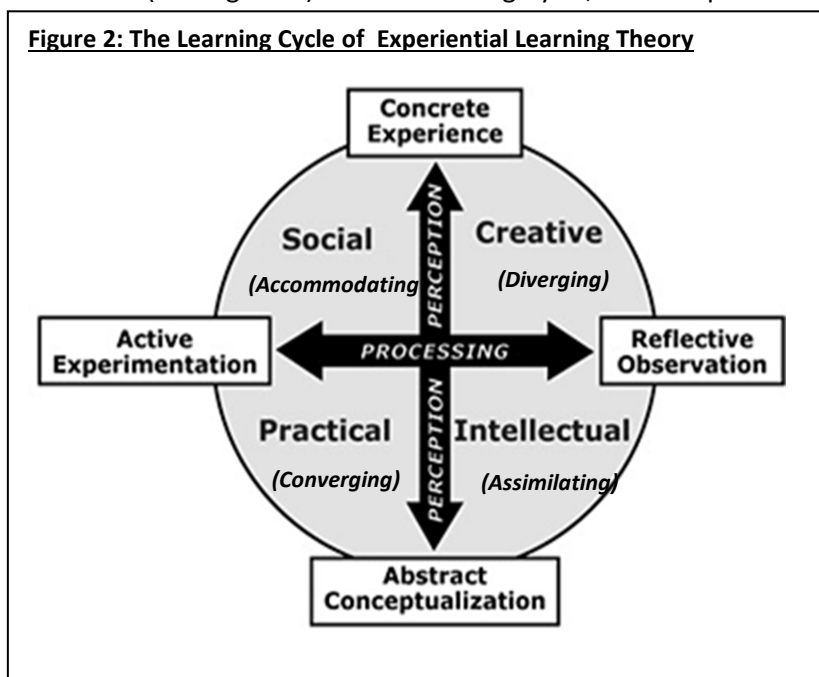
a CoP to be dynamic, individuals must be empowered to explore and express their own identities – both individual and collective identities. If members only “participate” in ways that they see as complying with and mimicking the other members of the group, then there is little possibility for transformative social learning. In this manner though, the understandings provided by CoP still mainly serve to explain the facilitative conditions that are prerequisites to the occurrence of social learning, although a set of conditions that integrates a stronger learning perspective than usually elaborated. Thus, as part of the analytical framework for social learning, the five conditions for an effective learning community identified as part of the CoP concept may be investigated as the environmental conditions (both physical and social) *where* social learning occurs or might occur.

2.2 Experiential Learning

The educational approach of experiential learning theory (ELT) can strengthen our understanding of social learning by providing a model of *how* learning can occur through direct participation in communities of practice. ELT was originally conceptualized by Kolb and Fry in 1975 and elaborated on by Kolb in 1984. ELT draws on past works by John Dewey, Jean Piaget and Kurt Lewin, and it provides a conceptual model of a “complete” learning cycle that incorporates all preferred learning styles. ELT defines learning as, “the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience” (Kolb 1984: 48). Kolb identifies four stages that create the experiential learning cycle: concrete experience, reflective observation, abstract conceptualisation, and active experimentation. Though the cycle can be entered at any point, it is viewed that each stage follows the previous in the above order.

Kolb further presents two primary dimensions of learning: 1) *perception* – the way in which information is grasped from experience, ranges from concrete experience to abstract conceptualisation; and 2) *processing* – the way in which the information is processed, ranges from active experimentation to reflective observation. These two intersecting axes create four quadrants from which four learning styles are elaborated (see Figure 2). In this learning cycle, value is placed

both on concrete/real-world experiences and abstract thinking/reflection about a given situation as important processes through which we gain knowledge about our environment. Observation of action and reinterpretation of knowledge frameworks based on review of previous outcomes are continuous actions throughout the experiential learning cycle. Breathnach suggests that the reflexivity embodied in the learning cycle is essential for encouraging responsive and proactive development rather than reactive change (Breathnach, 2006).



Source: (Schaller et al., 2007)

The four learning styles identified by Kolb are: diverging, assimilating, converging, and accommodating. Tennant (1997) explains the general typologies of the learners in each category. A *diverger* learns through experience and reflection, usually has a strong imagination and is good at seeing multiple perspectives. An *assimilator* prefers to reflect and conceptualise often using inductive reasoning and is good at creating theoretical models. A *converger* learns through conceptualising and then experimenting, and is strong at practical application of concepts and hypo-deductive reasoning. An *accommodator* prefers experimentation and action, solves problems intuitively and is able to create practical solutions (Tennant 1997 in Smith 2010). Schaller et al. (2007) provides a simplified language for these four learning styles as follows:

- **Divergers** = “Creative Learners are imaginative”;
 - **Assimilators** = “Intellectual Learners are organised, logical, and precise”;
 - **Convergers** = “Practical Learners are both thinkers and doers”;
 - **Accommodators** = “Social Learners are leaders”.
- (Schaller et al. 2007: 2)

Full and rich learning experiences will provide opportunities to participate in all four learning activities and accommodate each of these learning styles. When ELT is integrated with a CoP approach, the holism of this cycle can create significant experience as it provides a strategic process for engendering the collective creation of knowledge through the three aspects of belonging: engagement, imagination and alignment. Furthermore, the deliberation that occurs in communities of practice to form shared understandings is facilitated through the steps of the experiential learning cycle of observing/reflecting, conceptualizing/planning, experimenting and experiencing. Communities of practice employing this type of experiential learning cycle in their collective pursuit of sustainability create an expanding knowledge framework by intermixing active involvement in planning, conscientious observation of development actions, reflective consideration of outcomes and review/restructuring of beliefs and assumptions. In this manner, ELT and the experiential learning cycle may be investigated as the process of *how* learning occurs in a social learning process.

2.3 Cooperative Inquiry and Communicative Action

This third section of the analytical framework aims to consider two distinct theoretical perspectives. First, cooperative inquiry (also referred to as collaborative inquiry) has its basis as a research methodology first developed by Heron and Reason in the 1970s as an approach to conducting research “with” people rather than “on” people. Second, communicative action and reason is a theory of mutual/group deliberation aimed at the rational reconstruction of social understandings and perspectives expounded by Habermas during the 1980s. Together, these two theories are used to investigate *why* social learning can achieve a transformative learning dimension and lead to a learning society (in pursuit of sustainability).

Cooperative inquiry as a research methodology is closely aligned with participatory action research which provides us with three broad strategies in the overarching methodology, i.e. 1st person action research/practice, 2nd person action research/practice, and 3rd person action research/practice. First person action research is concerned with the researcher and his or her ability to act through inquiry basing choices on awareness and best practice and to assess the effects of these actions in real world experience. Second person action research involves face-to-face relationships and the researcher can foster the growth of mutual care/concern. Third person action research aims at creating communities

of inquiry where all members are actively engaged in the learning process. This methodological approach supports investigation on the dynamics of relationships and how they function for supporting both well-being and change (Reason, 2001). Through this approach, participatory action research also aims to generate three separate forms of knowledge: 1) representational knowledge provides explanation through identifying the relationship between discreet variable (e.g. this is the type of knowledge most studied under the positivist framework); relational knowledge is gained through a process of empathy or directly relating to the position of someone/something else (e.g. this type of knowledge is critical in community life); reflective knowledge requires consciousness raising and is manifested in visions of what ought or could be based on a sense of right and wrong (e.g. this type of knowledge has a critical role in social change and transformation) (Reason & Bradbury, 2003). Employing the strategies and the three knowledge types, participatory action research is based upon a set of methods that will encourage practical actions that improve human well-being.

Cooperative inquiry becomes useful not only as a research methodology but also as an approach to understanding social learning as it is viewed as one of the important means of moving from first person research to second person and onto third person research. The main premise of co-operative inquiry is that good research cannot be done *on* people but must be done *with* people. Thus, the researcher must not only work in practice with a group central to the issues of research to address the matters that are important to them, but ideally the researcher will also inspire/facilitate the group members to collaborate in a collective partnership based on critical action and reflection.

Reason and Heron describe six important procedures that can improve the quality of knowledge developed in co-operative inquiry. First, *research cycling between action and reflection* helps to look at experiences from different angles, develop new ideas and try different ways of behaving. Second, *creating a balance of action and reflection* is crucial, though each research topic and inquiry group will find a different balance. Third, *developing critical attention* involves promoting in all participants a sense of inquiry and curiosity for understanding and can be promoted through research cycling and creating constructive challenges. Fourth, *authentic collaboration* between the members of a co-operative inquiry group can be facilitated through a process that secures equal opportunities for sharing and leadership. Fifth, since co-operative inquiry is about examining the groups' individual and collective lives, it is necessary to have *means for dealing with distress* which can be scheduled into the group for sharing emotional feelings of the process. Finally, both *order and chaos need to be equally embraced* in the process of discovery that will undergo periods of confusion and uncertainty, but that these may prove the most beneficial paths to pursue (Reason & Heron, 1996).

The goal of action research is to produce knowledge for improving living, as mentioned earlier, but this can create difficulty in assessing the success of practices and procedures used during research. It is thus useful to draw attention to the two main forms of validation that are used in action research as they have direct application to the validation of new knowledge generation in communities of practice and social learning. These forms of validation are pragmatic validation and consensus validation. Pragmatic validation is directly linked to finding a balance between action and reflection. It also encourages a spiral design that continually acknowledges the casual relationships on which measures are based, thus each analysis and measure is likely to lead to a new requirement for research and action. Consensus validation involves the evaluations, interpretations and knowledge generated by the participants of the cooperative inquiry group and the larger community. Validity is linked not just

to the researcher's own judgements and findings but that of the community for which the research is being carried out (Irgens Karlsen, 1991).

Habermas, in the *Theory of Communicative Action* (1981), builds upon the critical theory of the Frankfurt School and investigates the process of self-reflection used by people to become conscious of the socio-cultural determinants of knowledge, meaning and understanding. In a break from the pejorative stance of critical theory that held that people are deluded into believing false consciousness as a form of oppression, Habermas promotes communication and deliberation as a means to create mutual understandings and rational reconstruction of socio-cultural determinants. "*Communicative rationality*... characterizes the activity of reflecting upon our background assumptions about the world, bringing our basic norms to the fore, to be questioned and negotiated" (Braaten 1991: 12). This idea of communicative rationality directly contrasts earlier ideas of instrumental rationality and functional rationality as the main systems for structuring cultural evolution.

Communicative rationality thus provides a theoretical model that allows us to understand how changes in social meaning/understanding and culturally-defined world views and belief systems can occur through engagement in mutual/group deliberation. Habermas goes on to elaborate how the use of "ideal speech types" can strengthen democratic participation and also how institutional structures can be modified to better support collective deliberation and decision making. "Establishing relations through the exchange of illocutionary acts make it possible for speakers and hearers to achieve mutual understanding about their courses of action, that is, to cooperate rather than compete in important areas of life" (McCarthy 1994: 265).

Under the modern paradigm (where economic growth has served as the metanarrative for society's development), individuals have generally been viewed as playing one singular role in influencing the course of development, i.e. as a consumer. However, notable efforts to influence changes in consumer behavior towards more sustainable patterns of consumption have fallen substantially short of their mark, and many studies have observed that individual consumers are more directed by market structures and options than they are influencers of these systems. This creates a cycle of disempowerment that can only be overcome by reestablishing a sense of citizenship that moves beyond the narrow boundaries of the market and consumption choices. The understandings provided in the interpretations of cooperative inquiry and communicative action demonstrate an ideal where communities of practice can be engendered in processes of transformative social learning through collective discourse and deliberation to examine current beliefs and patterns of living, to reflect on real world conditions and challenges, and to reimagine future trajectories and narratives towards a vision of sustainable living for all.

2.4 Application of Analysis

Didham and Ofei-Manu, in a comparative case study of five cases from Regional Centres of Expertise (RCEs) on Education for Sustainable Development (ESD) in Asia, find several important common features for the achievement of social learning in these settings, including:

- Achievement of a participatory learning cycle,
- Use of reflective observation supports *commonality* among group members,
- Learning situated in real-world experience and practical experimentation,
- Collective envisioning supports a sense of *belonging*,

- A diversity of roles for holistically enacting plans supports *interdependence*,
- Pragmatic validation used to substantiate new knowledge through real world application and testing.

From their findings, the authors suggest that it may be possible for an influential actor, such as a local government, to initiate a social learning process if they work to accommodate the factors of an effective learning community and “engage participants in a participatory learning cycle where cooperative inquiry and critical reflexivity are common features” (Didham & Ofei-Manu, n.d.). Collective stocktaking provides a means to initiate this learning cycle through the identification of key areas for improvement, which in turns supports *commonality*. Vision forming and goal/objective setting can direct this process towards transformative learning and support *belonging*. Critical reflection and real-world application and testing serve to strengthen *pragmatic validation* for knowledge generation. *Consensus validation* is further supported through deliberative discourse to help define a plan to achieve the envisioned change. Collective action on this plan strengthens group *interdependence* and through monitoring and evaluation, or observation and reflection, the next round of the learning cycle is initiated and enriched. “In noting the links between the participatory learning cycle and the influence the various stages may have on enhancing the factors of an effective learning community, one may want to mobilize a few quick initial cycles through the relevant observation – vision forming – pragmatic testing – planning – acting stages if one is trying to initiate such a social learning process” (Didham & Ofei-Manu, n.d.).

3. Evaluating Social Learning in Collaborative Governance Processes

The evaluation of social learning and the achieved learning outcomes is a difficult and challenging task that has yet to be well defined in the research. In attempting to develop an evaluation framework for social learning, multiple questions must be addressed:

- How to delineate between individual and collective learning, and how to identify both separately?
- How to evaluate facilitative factors or procedural steps in social learning processes?
- How to identify and assess the outcomes achieved from social learning processes?
- How to determine the effectiveness of social learning?

Of course, none of these questions have clear or easy answers, but they at least help to distinguish the various aspects that must be accounted for when reviewing and evaluating social learning processes, including: procedure, learning achievement (both individual and collective), wider social outcomes achieved through social learning, and overall effectiveness. Although previous authors have warned about the confusion between these different aspects, it is reasonable to assume that any real evaluation of overall effectiveness must account for all three of the previous aspects.

Holden provides one of the more extensive approaches to assessing social learning in planning practice, and in an attempt to develop a methodology for assessing social learning, she identifies the following factors for analysis:

1. Identify communities as units of analysis,
2. Investigate tacit knowledge by studying group routines,
3. Study processes of change within communities,
4. Search for the diffusion of knowledge to a system of policy practice (Holden, 2008: 16).

Holden goes on to explain that the four methodological steps can be studied best through “case study research methodology that draws from each of these bodies of theory in order to investigate knowledge communities, the explicit and tacit knowledge contained in the community’s knowledge

codebook, the paths of evolution of knowledge and community membership and diffusion and information transfer beyond the community” (Holden, 2008: 20). Although this approach may be effective in long-term and ingrained research *with* communities, it is not a methodology suitable for more protracted research in comparative case studies that aim to identify correlation between *achievement levels of social learning* and specific *facilitative factors or procedural steps*.

Keen, Brown and Dyball (2005) explain an analysis of social learning that is focussed more on what the process achieves for the learners than the process itself, but this is useful in providing consideration on how the process would achieve these outcomes. In the five braided strand approach to social learning (see Figure 3): 1. Reflection and reflexivity, 2. Systems orientation and systems thinking, 3. Integration and synthesis, 4. Negotiation and collaboration, and 5. Participation and engagement, are identified as the five critical features of effective social learning (Dyball, Brown, & Keen, 2009). On further consideration of the five braided strands, it seems possible to further categorise the strands in the following manner:

- Evaluation of Process → 1. Reflection and reflexivity;
- Evaluation of Learning Achievement → 2. Systems orientation and systems thinking, and 3. Integration and synthesis;
- Evaluation of Social Learning Outcomes → 4. Negotiation and collaboration, and 5. Participation and engagement.

In this way, a framework for evaluation may be loosely outlined around the three main features of: Evaluation of Process, Evaluation of Learning Achievement, and Evaluation of Social Learning Outcomes.

Figure 3: Five Braided Strand of Social Learning



Source: (Keen et al., 2005: 8)

Expanding the investigation of these three features individually, it becomes possible to elaborate the nature of the evaluation framework further. In evaluation of process, it is necessary as Holden suggests to begin with identifying the community as the unit of analysis. This requires an understanding of the nature of the group or community one is analysing and the nature of the processes they are undertaking. Although qualitative in nature, assessment of the group or community could be made around the five conditions for an effective learning community (presented in Figure 1) and change in these conditions potentially tracked over time. Next, assessment of the process should ideally relate to the evolving cycles of learning that are being achieved and support as Dyball et. al. argue critical awareness and reflective processes. Here the cycle of experiential learning provides a useful model of analysis.

The evaluation of learning achievement is one that is demonstrated best through the attainment of new knowledge, skills and values both at the individual and collective level. Assessment of individual learning achievement may be possible through longitudinal survey work or interviews. Such an approach would need to examine how the aggregate levels of knowledge on given environmental or

sustainability issues evolve throughout their period of engagement in the group. Assessment of collective learning is a more complex task, but this may be possible through dialogue analysis of meeting transcripts. In such an approach, it would be necessary to examine for the development of a common language and vocabulary throughout the period of engagement. For example, it may be possible to identify vocabulary that was not well-used or even contested during the early stages of group engagement becoming more common place. The individual survey work may also support this analysis of vocabulary development if respondents are asked to regularly define a set of terms and if overtime a convergence of definitions is found among respondents. A further aspect that would demonstrate social learning is a convergence of opinions on what are key issues, priorities and objectives for the group.

The evaluation of social learning outcomes may be the trickiest one in terms of demonstrating a level of causation between the process itself and the subsequent outcomes of the process. As Dyball et. al. suggest, improvements in negotiation, collaboration, participation and engagement are all important aspects related to effective social learning processes. Levels of engagement and collaboration may be rudimentarily tracked based on the time commitments individuals make to the collaborative process and the implementation of planned actions. Understanding the evolving nature of negotiation could be supported by the dialogue analysis conducted to examine collective learning achievement with an aim towards identifying if conflicts and disagreements related to entrenched views of group members reduce or increase over time and if a spirit of cooperation develops or not. For participation, there are many more advanced discussions on how one may evaluate the authenticity and quality of participation, which in general stem from the original discussions based on Arnstein's Ladder of Participation (see Collins & Ison, 2009 for example of this discussion in relation to social learning).

These three core aspects of the evaluation of social learning – process, learning achievements, and social learning outcomes – thus provide a holistic framework for how and to what extent social learning occurs. The evaluation of each single aspect requires further research and application in order for this overall approach to evolve over time. Each of these aspects although overlapping in reality are important to conceptually delineate to clarify the major aspects of social learning and for effectively testing these aspects against other procedural, situational and facilitative factors.

4. Findings for engaging Social Learning in Collaborative Governance

Three main steps can be elaborated for engaging communities of practice for sustainability social learning. Each step is complex in its own right and contains three specific features/actions for addressing that step (see table 3). The first step is referred to as *engagement in a situated community*, and this requires that the infrastructure for participation in community planning for sustainable development is set in place and that the community has access to the vehicles of change. More important in initiating a social learning process, this step should also achieve the elaboration of a common objective or vision among the various group members. The second step is referred to as *exploration of innovative interdependence*, and this uses action research to implement observation, assessment and reflection regarding the community's given capacity and assets, as well as the needs and challenges that must be addressed. This step will engage community members as both teachers and learners regarding their relationship to local assets and capital. The third step is referred to as *aligning common understandings and coordination*, and this aims for community-based strategies and

planning for sustainable development and lifestyles. The practical action that follows from this step allows the individuals of a given community of practice to move from abstract conceptualisation to concrete experience and thus stimulate a process of reification. Together these three actions should work together to achieve a sense of belonging in a community of practice for sustainability learning as well as establishing a sense of responsibility towards the transition to sustainable lifestyle and development patterns.

Table 3: Proposed Steps for Securing a Community of Practice for Sustainability Learning

Steps	Features
1) Engagement in a Situated Community	<ul style="list-style-type: none"> • Participatory Infrastructure • Community Access to Vehicles of Change • Elaboration of Common Objectives/Vision (<i>for a sustainable future</i>)
2) Exploration of Innovative Interdependence	<ul style="list-style-type: none"> • Action Research: observation, assessment and reflection • Map existing capacities and assets, as well as needs and desires • Engage individuals in a process of investigation, learning, advocating and teaching
3) Aligning Common Understandings and Coordination	<ul style="list-style-type: none"> • Planning community strategies for sustainable development and lifestyles • Transition from abstract conceptualisation to concrete experience – through utilising active experimentation as a form of pragmatic knowledge testing and validation • Reification through action and reflection

The first step of *engagement in a situated community* provides opportunity for the learning methodologies to be applied to draw out a culturally grounded approach that is rooted in the local contexts of the community and environment. Furthermore, it is the participatory engagement in the anticipated process of improving and developing the capacity of the community that serves as a trigger for continued local engagement. This primary step is important for securing an infrastructure that facilitates participation, cooperation and local jurisdiction over assets/capital and to also consider the (knowledge) capacities required among communities to complete the full process highlighted in the above table. A support model for this step could aim to establish a strong infrastructure to facilitate communities of practice for developing new and innovative solutions. This includes the promotion of pride in local ways of life, indigenous knowledge and the recognition of the richness of their traditional culture.

The second step of *exploration of innovative interdependence* is the stage where strong investigative learning and action research should be implemented to encourage participatory—experiential learning on environmental management and sustainable development. Action research engages the participants in defining their own learning process and establishing original understandings of the issues they investigate, which in regards to communities of practice is a significant opportunity to apply the full scale of the experiential learning cycle. A normal investigative approach to community-based, action research would be first to conduct stocktaking and assess current practices; identify challenges and obstacles; conceptualise innovative solutions; and the participants then explain to others the lessons learned and advocate these new solutions to the wider community. The importance of creating effective learning environments must also be considered in correspondence with this second step.

The third step of *aligning common understandings and coordination for sustainable development* is the stage of planning and action, which is an important process in the learning cycle as it reifies the knowledge gained throughout the earlier stages through the transition from conceptualisation to

experience. The opportunity to reflect on the actual impact of actions taken is also an important stage in the learning cycle as a means to initiate its continuation through another phase. To achieve this, ensuring that reflection follows action and inputs into future planning phases is essential.

Outside actors engaged in supporting local-level transitions to sustainable development and sound environmental management can utilise this model of initialising communities of practice for sustainability learning to strengthen their overall contribution. Programmes for development assistance may be strategically prepared to engage each of these three steps to ensure the formation of a community of practice engages in a meaningful learning cycle based on the ELT frameworks. At each step of the proposed process, there is a need for tools and approaches to facilitate the achievement of each learning goal. This work will often take the form of capacity building and human resource development so that the members of the communities of practice have ownership over the knowledge and assets that are needed to successfully manage this process, and thus it is important that this support aimed at establishing the appropriate organisation, strategy and capacity for the long-term management of the initiative be maintained fully from within the local community. Outside actors can also provide valuable support in the form of financial assistance, networking between communities, good practice sharing, and aiding access to market opportunities.

Collaborative governance, participatory decision making and social cooperation are an essential part in providing the space and creating the opportunity for people to come together, deliberate and take action to reframe our patterns of living and well-being towards more sustainable pathways. Through this review of social learning, it is apparent that the effort of “reframing” is directly linked to a process of collective and transformative learning. Such learning is a primary condition to 1) identifying are current constructs and worldviews that currently define and validate our unsustainable patterns of living; 2) reconsidering and examining the legitimacy of these views and their surrounding knowledge sets; 3) deliberating and defining new visions, goals and objectives for our development trajectories; and 4) pragmatically testing and generating new knowledge, practices and actions that help to achieve these objectives. It thus that we must consider the facilitation of the *place* and the *process* for social learning to evolve naturally to be the primary work of leaders, facilitators and change agents when people are brought together in opportunities for collaborative governance.

References

- Bandura, A. (1977). *Social Learning Theory*. Oxford: Prentice-Hall.
- Barton, D., & Tusting, K. (2005). Introduction. In D. Barton & K. Tusting (Eds.), *Beyond Communities of Practice: Language, power, and social context*. Cambridge: Cambridge University Press.
- Braaten, J. (1991). *Habermas's Critical Theory of Society*. New York: State University of New York Press.
- Breathnach, C. (2006). *Knowledge Creation, Communal Learning and the Creation of Sustainable Community* (No. no. 3). Dublin.
- Collins, K., & Ison, R. (2009). Jumping off Arnstein's ladder: social learning as a new policy paradigm for climate change adaptation. *Environmental Policy and Governance*, 19(6), 358–373. doi:10.1002/eet.523
- Didham, R. J., & Ofei-Manu, P. (n.d.). Social Learning for Sustainability: Advancing community-based inquiry and collaborative learning for sustainable lifestyles. In V. W. Thoresen, R. J. Didham, J. Klein, & D. Declan (Eds.), *Responsible Living-- Concepts, Education and Future Perspectives*. Heidelberg: Springer.
- Dyball, R., Brown, V. A., & Keen, M. (2009). Towards sustainability: five strands of social learning. In A. E. J. Wals (Ed.), *Social Learning: Towards a sustainable world*. Wageningen: Wageningen Academic Publishers.
- Flood, R. L. (1999). *Rethinking "The Fifth Discipline": Learning within the unknowable*. London: Routledge.
- Garmendia, E., & Stagl, S. (2010). Public participation for sustainability and social learning: concepts and lessons from three case studies in Europe. *Ecological Economics*, 69, 1712–1722.
- Glasser, H. (2009). Minding the gap: the role of social learning in linking our stated desire for a more sustainable world to our everyday actions and policies. In A. E. J. Wals (Ed.), *Social Learning: Towards a sustainable world* (pp. 35–61). Wageningen: Wageningen Academic Publishers.
- Handley, K., Sturdy, A., Fincham, R., & Clark, T. (2006). Within and Beyond Communities of Practice: Making sense of learning through participation, identity and practice. *Journal of Management Studies*, 43(3), 641–653.
- Holden, M. (2008). Social learning in planning: Seattle's sustainable development codebooks. *Progress in Planning*, 69(1), 1–40. doi:10.1016/j.progress.2007.12.001
- Holden, M., Esfahani, A. H., & Scerri, A. (2014). Facilitated and emergent social learning in sustainable urban redevelopment: exposing a mismatch and moving towards convergence. *Urban Research & Practice*, 7(1), 1–19. doi:10.1080/17535069.2014.885735
- Hung, D. W. L., & Chen, D.-T. (2001). Situated Cognition, Vygotskian Thought and Learning from the Communities of Practice Perspective: Implications for the design of web-based e-learning. *Education Media International*, 38(1), 3–12.

- Irgens Karlsen, J. (1991). Action Research as Method: reflections from a program for developing methods and competence. In W. Foote Whyte (Ed.), *Participatory Action Research*. Newbury Park: Sage Publications.
- Keen, M., Brown, V. A., & Dyball, R. (2005). Social learning: a new approach to environmental management. In M. Keen, V. A. Brown, & R. Dyball (Eds.), *Social Learning in Environmental Management: Towards a sustainable future* (pp. 3–21). Abingdon: Earthscan.
- Kolb, D. A. (1984). *Experiential Learning: Experience as the source of learning and development*. New Jersey: Prentice-Hall.
- Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- McCarthy, T. (1994). The Critique of Impure Reason: Foucault and the Frankfurt School. In M. Kelly (Ed.), *Critique and Power: Recasting the Foucault/Habermas debate*. London: MIT Press.
- Pahl-Wostl, C., & Hare, M. (2004). Process of Social Learning in Integrated Resources Management. *Journal of Community & Applied Social Psychology*, 14, 193–206.
- Pahl-Wostl, C., Sendzimir, J., Jeffrey, P., Aerts, J., & Berkamp, G. (2007). Managing Change toward Adaptive water Management through Social Learning. *Ecology and Society*, 12(2), 1–18.
- Reason, P. (2001). The Action Turn: Toward a transformational social science. In J. Henry (Ed.), *Creative Management*. London: Sage Publications.
- Reason, P., & Bradbury, H. (2003). Introduction: Inquiry and participation in search of a world worthy of human aspiration. In P. Reason & H. Bradbury (Eds.), *Handbook of Action Research: Participative inquiry and practice*. London: Sage Publications.
- Reason, P., & Heron, J. (1996). *A Layperson's Guide to Co-operative Inquiry*. Bath: Centre for Action Research in Professional Practice, University of Bath. Retrieved from http://wagner.nyu.edu/files/leadership/avina_heron_reason2.pdf
- Reed, M., Evely, A., Cundill, G., Fazey, I., Glass, J., Laing, A., ... Stringer, L. (2010). What is Social Learning? *Ecology and Society*, 15(4), r1. Retrieved from <http://www.ecologyandsociety.org/vol15/iss4/resp1/>
- Rodela, R., Cundill, G., & Wals, A. E. (2012). An analysis of the methodological underpinnings of social learning research in natural resource management. *Ecological Economics*, 77, 16–26.
- Schaller, D. T., Borun, M., Allison-Bunell, S., & Chambers, M. (2007). One Size Does Not Fit All: Learning style, play, and on-line interactives. In J. Trant & D. Bearman (Eds.), *Museums and the Web 2007: Proceedings*. Toronto: Archives and Museum Informatics. Retrieved from <http://www.archimuse.com/mw2007/papers/schaller/schaller.html>
- Smith, M. K. (2010). David A. Kolb on experiential learning. *The Encyclopedia of Informal Education*. Retrieved from <http://infed.org/mobi/david-a-kolb-on-experiential-learning/>
- Tennant, M. (1997). *Psychology and Adult Learning 2e*. (Routledge, Ed.). London.

- Tilbury, D. (2009). Learning based change for sustainability: perspectives and pathways. In A. E. J. Wals (Ed.), *Social Learning: Towards a sustainable world* (pp. 117–131). Wageningen: Wageningen Academic Publishers.
- United Nations Environment Programme. (2011). *Visions for Change: Recommendations for effective policies on sustainable lifestyles*. Paris.
- Wals, A. E. J., & van der Leij, T. (2009). Introduction. In A. E. J. Wals (Ed.), *Social Learning: Towards a sustainable world* (pp. 17–32). Wageningen: Wageningen Academic Publishers.
- Wang, C. L., & Ahmed, P. K. (2002). *A Review of the Concept of Organisational Learning* (No. WP004/02) (p. 19). Wolverhampton.
- Wegner, E. (1998). *Communities of Practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.
- Wildemeersch, D. (2009). Social learning revisited: lesson learned from North and South. In A. E. J. Wals (Ed.), *Social Learning: Towards a sustainable world* (pp. 99–116). Wageningen: Wageningen Academic Publishers.